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Review article

Review of the Genera *Acrodactyla* and *Acropimpla* (Hymenoptera: Ichneumonidae: Pimplinae) from South Korea

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ABSTRACT

We reviewed ten South Korean species of the genera *Acrodactyla* Haliday, 1838 and *Acropimpla* Townes, 1960. Only *Acropimpla persimilis* (Ashmead, 1906) has been distributed in South Korea, and *Acrodactyla* is recorded for the first time from South Korea. We report nine newly recorded species: *Acrodactyla carinator* (Aubert, 1965), *Acrodactyla degener* (Haliday, 1838), *Acrodactyla lydia* Kasparyan, 1979, *Acrodactyla takewakii* (Uchida, 1927), *Acrodactyla varicarinata* (Uchida and Momoi, 1958), *Acropimpla aspera* Gupta and Tikar, 1976, *Acropimpla didyma* (Gravenhorst, 1829), *Acropimpla nakula* Gupta and Tikar, 1976 and *Acropimpla pictipes* (Gravenhorst, 1829). Keys to South Korean species of the genera *Acrodactyla* and *Acropimpla*, diagnoses and illustrations are provided.

Keywords: Eastern Palaearctic, *Acrodactyla*, *Acropimpla*, Ephialtini, taxonomy

INTRODUCTION

Tribe Ephialtini is the largest group of the subfamily Pimplinae. And, this group currently include 963 species in 59 genera from the world. Among them, the genus *Acrodactyla* is a relatively small group that includes 32 species worldwide, 11 of which inhabit Eastern Palaearctic region: four, eight and three have been recorded from China, Russia and Japan, respectively (Yu et al., 2016). *Acrodactyla* is recorded for the first time from South Korea. Most species of this genus are koinobiont ectoparasitoids of Araneae species (Shaw, 2002). Oviposition occurs in the adult of the host (Evans, 1969).

The Genus *Acropimpla* is moderately sized group that includes 41 species worldwide, including four in Eastern Palaearctic region: four species have been recorded from China and Japan, and three from Russia. A taxonomic study of South Korean *Acropimpla* was initiated by Kim (1955), who reported one species, *Acropimpla persimilis* (Ashmead, 1906). For the next 60 years, the South Korean genus *Acropimpla* received very little attention, and the existing South Korean genus *Acropimpla* only includes one species. Most species of this genus are ectoparasitoids of lepidopteran larvae (Iwata, 1961), but some are parasitoids of larvae or pupae of Coleoptera and Hymenoptera. Oviposition occurs in the larva, nymph and pupa of the host (Carolin and Coulter, 1959; Allen et al., 1969; Kamijo, 1973). In this study, we report nine newly recorded species: *Acrodactyla carinator* (Aubert, 1965), *Acrodactyla degener* (Haliday, 1838), *Acrodactyla lydia* Kasparyan, 1979, *Acrodactyla takewakii* (Uchida, 1927), *Acrodactyla varicarinata* (Uchida and Momoi, 1958), *Acropimpla aspera* Gupta and Tikar, 1976, *Acropimpla didyma* (Gravenhorst, 1829), *Acropimpla nakula* Gupta and Tikar, 1976 and *Acropimpla pictipes* (Gravenhorst, 1829). Among them, *Acropimpla aspera* Gupta and Tikar, 1976 and *Acropimpla nakula* Gupta and Tikar, 1976 also recorded for the first time from Eastern Palaearctic region. We provide diagnoses, illustrations and keys to the South Korean *Acrodactyla* and *Acropimpla* species.

MATERIALS AND METHODS

Materials used in this study were collected by sweeping

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and Malaise trapping, after which they were deposited in the Animal Systematic Laboratory of Yeungnam University (YNU, Gyeongsan, South Korea). Morphological terminology follows that of Townes (1969). Specimens were examined using an AxioCam MRc5 camera attached to a stereo microscope (Zeiss Stereo Discovery, V20; Carl Zeiss, Göttingen, Germany), processed using AxioVision SE64 software (Carl Zeiss), and optimized with a Delta imaging system (i-solution; IMT i-Solution Inc., Vancouver, Canada). Distributional data follows that of Yu et al. (2016). Species diagnoses are based on South Korean specimens.

Abbreviations for collections are as follows: AEI, American Entomological Institute, Gainesville, U.S.A.; DZUS, Department of Zoology, University of Sofia, Sofia, Bulgaria. (J.A. Kolarov collection.); HU, Hokkaido University, Faculty of Agriculture, Entomological Institute, Sapporo, Japan; IZU, Instytut Zoologiczny Uniwersytetu, Wroclaw, Poland (Gravenhorst collection); MZ, Musée Zoologique, Place Riponne, Lausanne, Switzerland; NMI, National Museum of Ireland, Kildare Street, Dublin, Ireland; NR, Naturhistoriska Riksmuseet, Sektionen för Entomologi, Stockholm, Sweden; USNM, United States National Museum of Natural History, Smithsonian Institute, Washington, D.C., U.S.A.; ZI, Zoologiska Institutionen, Lund, Sweden; ZIU, Zoologisches Institut der Universität, Martin-Luther-Universität, Halle, Germany; ZS, Zoologisches Staatsammlung, Münchhausenstrasse, München, Germany.

Abbreviations of South Korean provinces and indices used in the paper as follows: CB, Chungcheongbuk-do; CN, Chungcheongnam-do; GB, Gyeongsangbuk-do; GG, Gyeonggi-do; GN, Gyeongsangnam-do; GW, Gangwon-do; JB, Jeollabuk-do; JN, Jeollanam-do; TD, type depository; TL, type locality; TS, type species.

SYSTEMATIC ACCOUNTS

Order Hymenoptera Linnaeus, 1758
Family Ichneumonidae Latreille, 1802
Subfamily Pimplinae Wesmael, 1845
Tribe Ephialtini Hellén, 1915

[1]*Genus *Acrodactyla* Haliday, 1838

Barypus Haliday, 1837: 94. TS: *Pimpla degener* Haliday.

Colpomeria Holmgren, 1859: 126. TS: *Colpomeria laevigata* Holmgren.

Symphylus Förster, 1871: 105. TS: *Symphylus hadrodactylus* Förster.

Pantomima Rossem, 1990: 314. TS: *Pantomima festata* Rossem.

Diagnosis. Clypeus separated from face by a groove. Epomia distinctly reach to dorsal area. Notauli with distinct vertical carina on anterior area. Mesopleuron with epicnemial carina reach to upper edge area. 1st tergite stout. Fore wing without areolet and vein 3rs-m.

Key to species of the genus *Acrodactyla* from South Korea

1. Mesosoma and metasoma almost yellowish brown (Fig. 4A, C, F) ······ *A. takewakii*
− Mesosoma and metasoma black (Except *A. degener* generally yellowish brown with black propodeum and metapleuron (Figs. 2, 3A, C, F) ······ 2
2. Mesoscutum smooth, shiny and hairless, sometimes sparsely punctate, with sparse hairs; notaulus of mesoscutum distinctly present; mid area of mesoscutum distinctly convex (Fig. 2C) ······ 3
− Mesoscutum significantly pubescent and sometimes matt; notaulus of mesoscutum weakly present; mid area of mesoscutum weakly flat (Fig. 3C) ······ 4
3. Metapleuron indistinctly polished and sparsely punctate. Mid femur of female not thickened, without tooth on basal ventral area (character of male unknown) ······ *A. degener*
− Metapleuron roughly punctate. Fore and mid femora of female relatively thickened, with tooth on basal ventral area (character of male unknown) (Fig. 1A, D) ······ *A. carinator*
4. Fore and mid femora of female without tooth on ventral area, slender respectively 5.5–5.0 as long as the width (character of male unknown) (Fig. 5D). Hind femur generally brown ······ *A. varicarinata*
− Fore and mid femora of female with a wide tooth, relatively thickened respectively 4.0–4.4 as long as the width (character of male unknown) (Fig. 3D). Hind femur mainly black ······ *A. lydia*

[2]***Acrodactyla carinator* (Aubert, 1965) (Fig. 1)**

Colpomeria carinator Aubert, 1965: 15. Type: ♀, TL: Switzerland, TD: MZ.

Acrodactyla braconiformis Kolarov, 1990: 61. Holotype: ♂, TL: Bulgaria, TD: DZUS.

Material examined. South Korea: GG: 1♀, Hanam-si, Misa-dong, Wetland, Willow forest, 12 May 2006, Son JC.

Diagnosis. Body almost black (Fig. 1A). Face weakly polished, slightly convex on mid area, weakly and relatively sparsely punctate, with hairs. Occipital carina complete.

Korean name: [1]*야자납작맵시벌속(신칭), [2]*오목야자납작맵시벌(신칭)

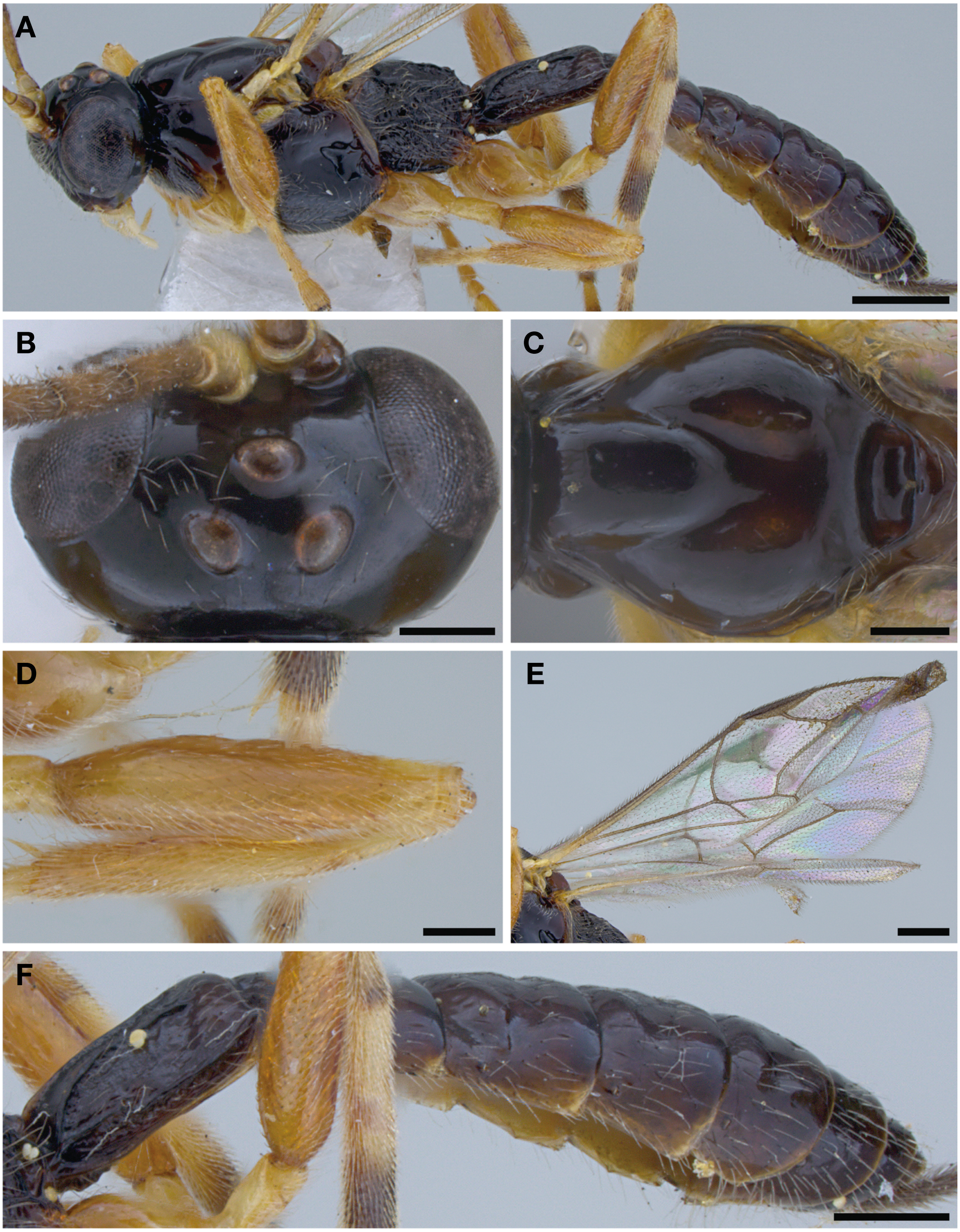

Fig. 1. A–F, *Acrodactyla carinator* (Aubert, 1965), female. A, Habitus in lateral view; B, Head in frontal view; C, Mesonotum in dorsal view; D, Fore femur in lateral view; E, Wings; F, Entire tergites in lateral view. Scale bars: A–F = 0.5 mm.

Flagellum entirely brown; segments on basal area relatively lighter. Mesopleuron polished and sparsely punctate, with sparse hairs; lower area relatively densely punctate, with hairs; mesopleural suture indistinctly and densely present; speculum weakly polished and smooth, except upper area sparsely punctate, with sparse hairs; mesopleural pit present; epicnemial carina present and postpectal carina absent; depth of sternaulus moderately deep (Fig. 1A). Metapleuron weakly, roughly and densely punctate, with dense hairs; lower area smooth (Fig. 1A). Fore leg yellowish brown except basal area of femur brown; entire tarsal claw reddish black (Fig. 1A, D). Mid leg yellowish brown except basal to sub apical area of femur brown; entire tarsal claw reddish black (Fig. 1A). Hind leg yellowish brown except coxa and sub basal to apical area of femur brown; sub basal and apical area of tibia, apical areas of 1st-3rd tarsomeres black (Fig. 1A). Hind wing with a basal hamulus and four distal hamuli; vein between intercubitella and subcostella distinctly shorter than intercubitella; nervulus intercepted by discoidella.

Distribution. South Korea (new record), Austria, Azerbaijan, Belarus, Bulgaria, France, Germany, Lithuania, Mongolia, Netherlands, Poland, Russia, Spain, Sweden, Switzerland, Turkey, United Kingdom.

Region. Eastern Palaearctic, Western Palaearctic.

[1]****Acrodactyla degener* (Haliday, 1838) (Fig. 2)**

Pimpla degener Haliday, 1838: 117. Lectotype: ♀, TL: United Kingdom, TD: NMI.

Symphylus hadrodactylus Förster, 1871: 106. Lectotype: ♀, TL: Germany, TD: ZS.

Symphylus politus Förster, 1871: 106. Lectotype: ♀, TL: Germany, TD: ZS.

Pantomima festata Rossem, 1990: 314. Holotype: ♀, TL: Sweden, TD: ZS.

Material examined. South Korea: GB: 1♀, Gyeongsan-si, Daehak-ro, 280, Yeungnam Univ., M.T., 35°49′30″N, 128°45′39″E, 17-25 Jun 2013, Lee JW.

Diagnosis. Body yellowish brown with a few black marks on head, mesosoma and metasoma (Fig. 2A, C, F). Face subpolished and sparsely punctate, with sparse hairs; mid area weakly convex; inner orbits with yellowish brown longitudinal marks. Occipital carina complete and medially convex (Fig. 2B). Flagellum brown, except 1st flagellomere lighter. Mesopleuron polished and sparsely punctate, with sparse hairs; mesopleural suture indistinct and dense; speculum subpolished and sparsely punctate, with sparse hairs; mesopleural pit present; epicnemial carina distinct and postpectal carina absent; depth of sternaulus shallow. Metapleuron subpolished and sparsely punctate, with sparse hairs. Fore leg yellowish brown except coxa brown; trochanter and trochantellus whitish brown; tarsal claw reddish black (Fig. 2A, D). Mid leg yellowish brown except coxa, trochanter and trochantellus whitish brown; tarsal claw reddish black. Hind leg yellowish brown except mid area of tibia whitish brown; basal and apical area of tibia and 5th tarsomere brown; tarsal claw reddish black (Fig. 2A). Hind wing with a basal hamulus and four distal hamuli; vein between intercubitella and subcostella distinctly longer than intercubitella; nervulus straight (Fig. 2E).

Distribution. South Korea (new record), Austria, Belarus, Bulgaria, Canada, Czech Republic, Finland, Germany, Ireland, Montenegro, Norway, Poland, Romania, Russia, Serbia, Slovakia, Sweden, Switzerland, Turkey, U.S.A., Ukraine, United Kingdom, Yugoslavia.

Region. Eastern Palaearctic, Nearctic, Western Palaearctic.

[2]****Acrodactyla lydia* Kasparyan, 1979 (Fig. 3)**

Acrodactyla lydia Kasparyan, 1979: 132. Type: ♀, TL: Russia-Primor'ye Kray, TD: ZI.

Material examined. South Korea: GB: 1♀, Yeongju-si, Punggi-eup, Sucheol-ri, Heuibang valley, 3 May 1997, Chung DK.

Diagnosis. Body black with brown marks on mesosoma and legs (Fig. 3A, C, D). Face subpolished and relatively densely punctate, with hairs; mid area indistinctly convex and densely punctate, with dense hairs. Occipital carina complete and weakly concave on mid area (Fig. 3B). Mesopleuron polished and sparsely punctate, with sparse hairs; mid area transversely smooth; lower area relatively densely punctate, with dense hairs; mesopleural suture distinct and dense; speculum subpolished and sparsely punctate, with sparse hairs; lower area of speculum smooth; mesopleural pit present; epicnemial carina present and postpectal carina absent; depth of sternaulus shallow. Metapleuron weakly polished, roughly and densely punctate, with dense hairs; diameter of puncture slightly long. Fore leg yellowish brown except coxa, trochanter and trochantellus whitish brown; tarsal claw reddish black. Mid leg yellowish brown except coxa, trochanter and trochantellus whitish brown; tarsal claw reddish black. Hind leg dark brown except trochanter and trochantellus whitish brown; apical area of femur brown. Hind wing with a basal hamulus and six distal hamuli; vein between intercubitella and subcostella distinctly longer than intercubitella; nervulus straight (Fig. 3E).

Distribution. South Korea (new record), Russia.

Region. Eastern Palaearctic.

[3]****Acrodactyla takewakii* (Uchida, 1927) (Fig. 4)**

Polysphincta takewakii Uchida, 1927: 172. Lectotype: ♀, TL: Japan, TD: HU.

Material examined. South Korea: GB: 1♀, Bonghwa-gun, Myeongho-myeon, Bukgok1-ri, Mt. Cheongryangsan, 3 Jul

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Korean name: [1]*퇴화야자납작맵시벌(신칭), [2]*리디아야자납작맵시벌(신칭), [3]*누런야자납작맵시벌(신칭)

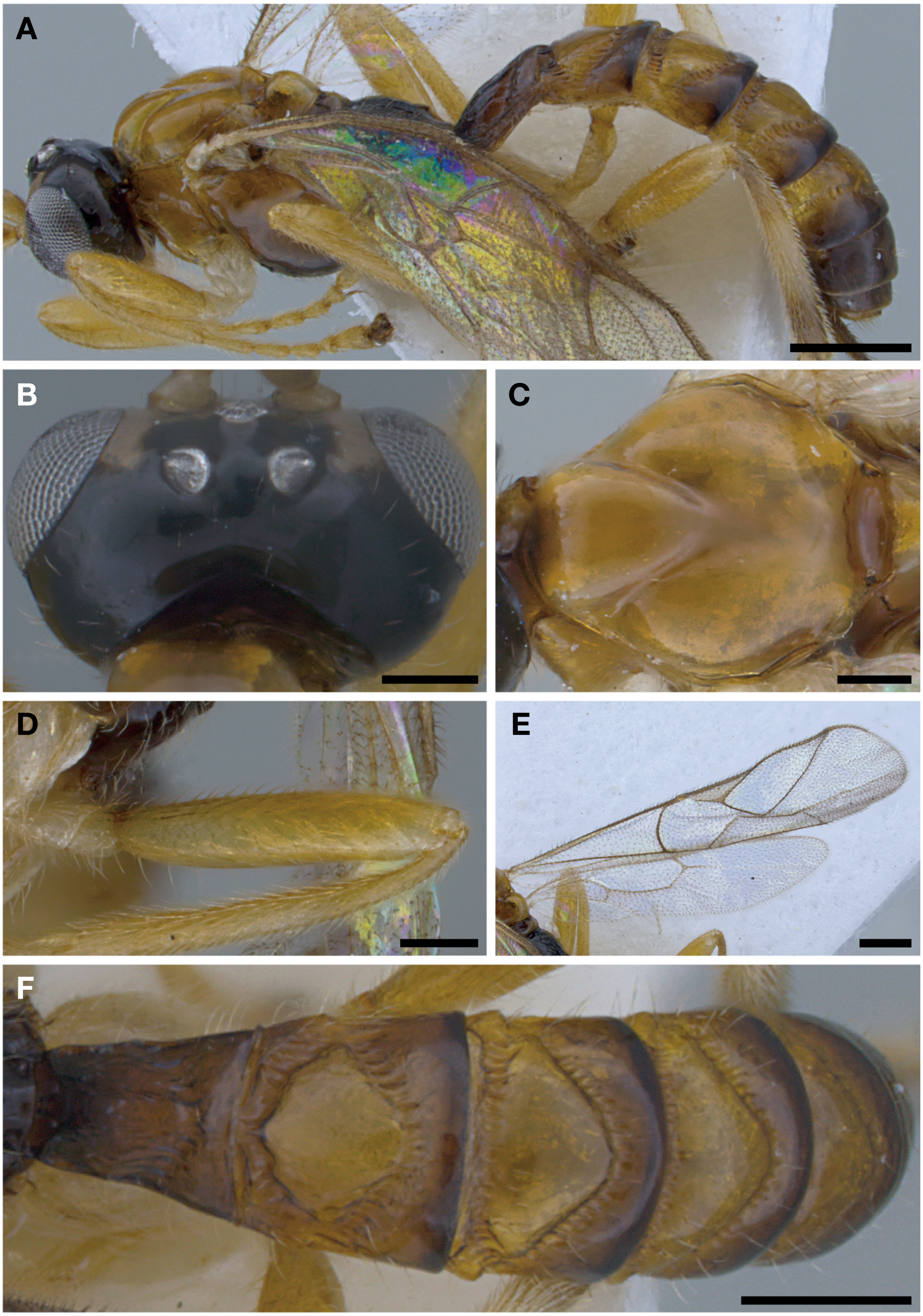

Fig. 2. A–F, *Acrodactyla degener* (Haliday, 1838), female. A, Habitus in lateral view; B, Head in dorsal view; C, Mesonotum in dorsal view; D, Fore femur in lateral view; E, Wings; F, Tergites in dorsal view. Scale bars: A–F=0.5 mm.

1988, Jeon TS.

Diagnosis. Body whitish brown to reddish brown except black area on head, metasoma and legs (Fig. 4A, C, D). Face weakly polished and sparsely punctate, with sparse hairs; mid area smooth and strongly convex. Occipital carina complete and slightly convex on mid area (Fig. 4B). Flagellum

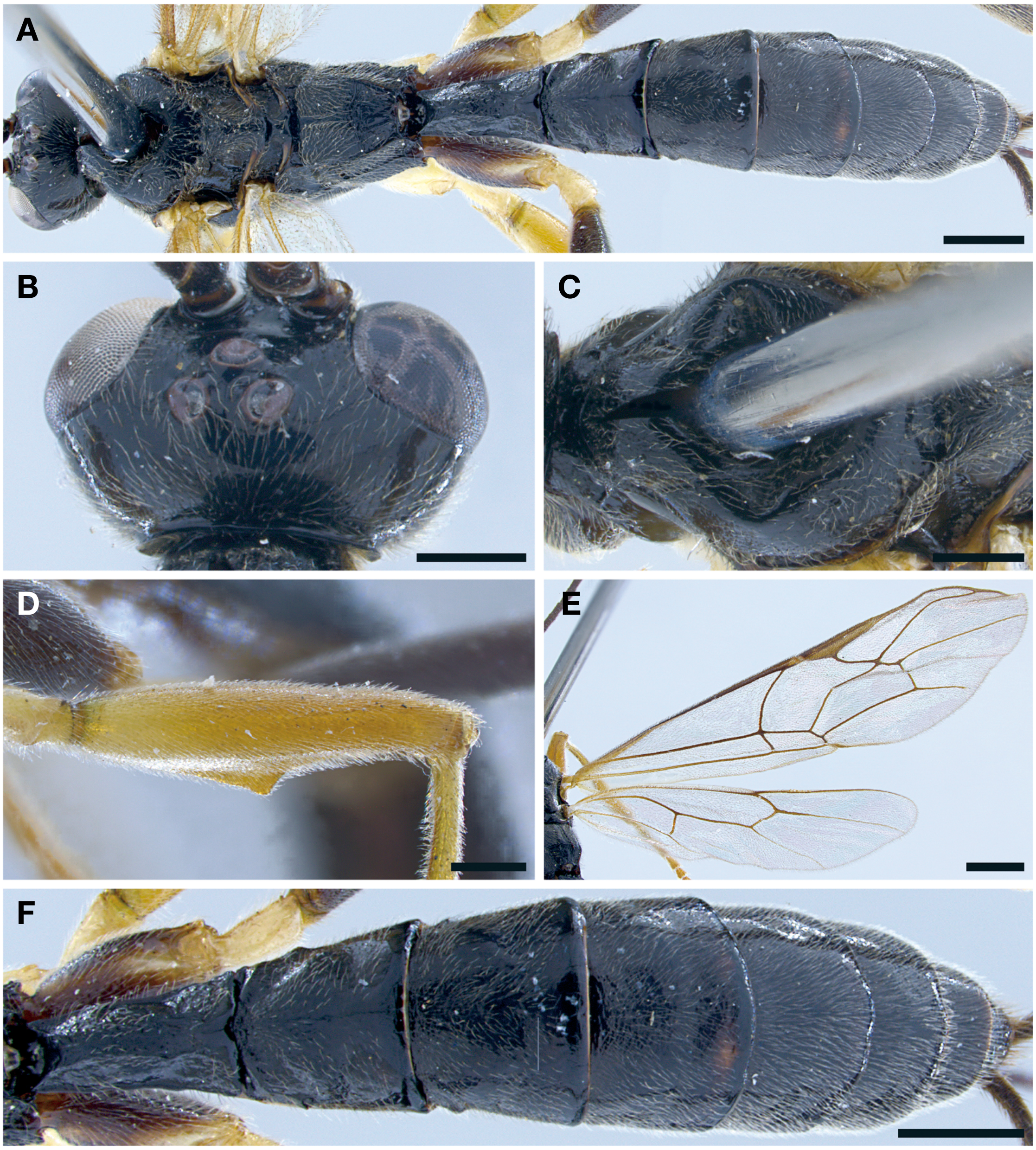

Fig. 3. A–F, *Acrodactyla lydia* Kasparyan, 1979, female. A, Habitus in dorsal view; B, Head in dorsal view; C, Mesonotum in dorsal view; D, Fore femur in lateral view; E, Wings; F, Tergites in dorsal view. Scale bars: A–F = 0.5 mm.

entirely brown. Mesopleuron subpolished and relatively sparsely punctate, with hairs; upper area sparsely punctate; mesopleural suture weakly and relatively sparse; speculum matt and sparsely punctate; mesopleural pit present; epicnemial carina present and postpectal carina absent; sternaulus indistinctly present (Fig. 4A). Metapleuron indistinctly polished and densely punctate, with dense hairs; lower area relatively sparsely punctate (Fig. 4A). Fore leg yellowish brown except coxa, trochanter and trochantellus whitish brown; apical area of tarsal claw reddish black (Fig. 4A, D). Mid leg yellowish brown except coxa, trochanter and trochantellus whitish brown; entire tarsal claw reddish black (Fig. 4A). Hind leg yellowish brown except trochanter, trochantellus, basal and mid area of femur, 1st and 2nd tarsomeres whitish brown; apical area of tarsal claw reddish black (Fig. 4A, F). Hind wing with a basal hamulus and five distal hamuli; vein between intercubitella and subcostella distinctly longer than intercubitella; nervulus straight.

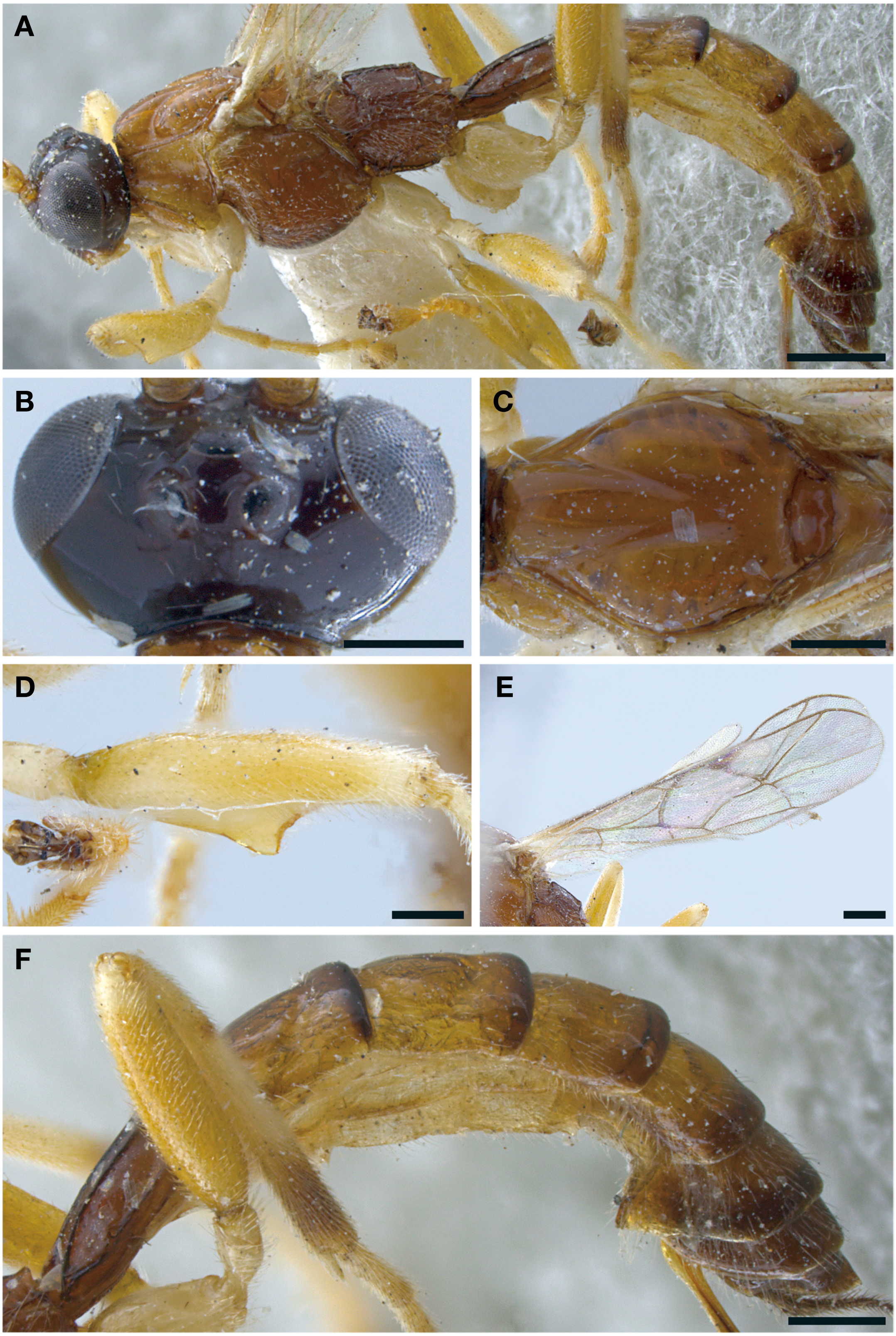

Fig. 4. A–F, *Acrodactyla takewakii* (Uchida, 1927), female. A, Habitus in dorsal view; B, Head in dorsal view; C, Mesonotum in dorsal view; D, Fore femur in lateral view; E, Wings; F, Tergites in lateral view. Scale bars: A–F=0.5 mm.

Distribution. South Korea (new record), China, Japan.
Region. Eastern Palaearctic, Oriental.

[1]**Acrodactyla varicarinata* (Uchida and Momoi, 1958) (Fig. 5)

Polysphincta varicarinata Uchida and Momoi, 1958: 27. Type: ♀, TL: Japan, TD: HU.

Material examined. South Korea: JN: 1♀, Gurye-gun, Sandong-myeon, Mt. Jirisan National Park, Nogodan, 4 Sep 1993, Choi WY.

Diagnosis. Body black with whitish brown to brown marks on head, mesosoma and legs (Fig. 5A, B, D). Face weakly polished and slightly sparsely punctate, with hairs; basal mid area weakly convex. Occipital carina complete and convex on mid area. Flagellum dark brown. Mesopleuron polished and relatively densely punctate, with hairs; basal mid area smooth; mesopleural suture distinctly and densely present; speculum polished and smooth; upper area slightly densely punctate, with dense hairs; mesopleural pit present; epicnemial carina present and postpectal carina absent; depth of sternaulus shallow (Fig. 5C). Metapleuron subpolished and sparsely punctate, with sparse hairs; lower area smooth (Fig. 5C). Fore leg yellowish brown except coxa, trochanter and trochantellus whitish brown; apical area of tarsal claw reddish black. Mid leg yellowish brown except apical area of coxa, trochanter and trochantellus whitish brown; apical area of tarsal claw reddish black. Hind leg yellowish brown except basal area of femur, apical area of tibia black; basal to mid area of tibia whitish brown; apical area of tarsal claw reddish black. Hind wing with a basal hamulus and five distal hamuli; vein between intercubitella and subcostella longer than intercubitella; nervulus straight.

Distribution. South Korea (new record), Japan, Russia.
Region. Eastern Palaearctic.

[2]*Genus *Acropimpla* Townes, 1960

Selenaspis Roman, 1910: 191. TS: *Hemipimpla alboscutellaris* Szépligeti.

Acropimpla Townes et al., 1960: 159. TS: *Charitopimpla leucostoma* Cameron.

Diagnosis. Clypeus distinctly convex; apical mid margin impressed, with notch. Propodeum relatively short and convex, with lateromedian longitudinal carinae on basal area. Fore wing with triangular or oblique shaped areolet. 1st tergite short, with relatively distinct lateromedian longitudinal carinae and lateral carina. 2nd tergite with distinct oblique grooves.

Key to species of the genus *Acropimpla* from South Korea

1. Dorsal area of propodeum smooth; lateromedian longitudinal carinae long and weak ·························· *A. nakula*
− Dorsal area of propodeum densely punctate on basal area; lateromedian longitudinal carinae distinct, at least extending to basal area (Fig. 6D) ··· 2
2. Face entirely black (Fig. 9B) ·· 3
− Face black, with brown to reddish black marks (Figs. 6, 7B) ··· 4
3. Areolet of fore wing petiolate (Fig. 9E). Ovipositor sheath shorter than metasoma ································ *A. pictipes*
− Areolet of fore wing sessile. Ovipositor sheath as long as metasoma ·· *A. persimilis*
4. Propodeum dorsally flat and distinctly punctate (Fig. 6D). Metasoma mainly ferruginous, with brown marks on near apical area (Fig. 6F) ····································· *A. aspera*
− Propodeum with curvature on dorsal area, moderately and sparsely punctate (Fig. 7D). Metasoma entirely black (Fig. 7F) ·· *A. didyma*

[3]**Acropimpla aspera* Gupta and Tikar, 1976 (Fig. 6)

Acropimpla aspera Gupta and Tikar, 1976: 150. Holotype: ♀, TL: Myanmar, TD: NR.

Material examined. South Korea: CB: 1♀, Boeun-gun, Mt. Songnisan National Park, Beopjusa temple maepyoso, 36°32′06″N, 127°49′40″E, M.T., 4 Aug–26 Sep 2007; 1♀, Cheongwon-gun, Miwon-myeon, Miwon-ri, M.T.III, 23–30 Sep 2005, Han JH; GB: 1♀, Mungyeong-si, Gaeun-eup, Wanjang-ri, Mt. Songnisan National Park, Beorimgijae, 36°40′59″N, 127°57′07″E, 12 Aug–11 Sep 2013, Choi JK; 1♀, Mungyeong-si, Gaeun-eup, Wanjang-ri, Mt. Songnisan National Park, 6 Jun–11 Jul 2011; GG: 1♀, Yangpyeong-gun, Yongmun-myeon, Yeonsu-ri, Mt. Yongmunsan, M.T.II, Alt. 324 m, 37°31′49.5″N, 127°34′18.8″E, 11–25 Jun 2009, Lim JO; 1♀, ditto, 16 Oct–18 Nov 2009, Lim JO; GN: 1♀, Jinju-si, Ibanseong-myeon, Dapcheon-ri, M.T.III, 27 Jun–3 Jul 2005, Ahn BK; 3♀♀, Hampyeong-gun, Macheon-myeon, Deokjeon-ri, Baekmudong, 35°21′13.95″N, 127°40′41.97″E, 14 Jul–11 Oct 2011, Jeong JC; GW: 1♀, Donghae-si, Samhwa-dong, Mureung gyegok, 37°27′45″N, 126°01′17″E, 21–30 May 2005, Lee JW; 1♀, Donghae-si, Samhwa-dong, Mureung valley, M.T., 35°24′46″N, 126°52′25″E, 1–8 Oct 2005, Lee JW; JB: 1♀, Namwon-si, Jucheon-myeon, Gugyong valley, 35°23′19.89″N, 127°27′44.51″E, 30 Sep 2011–2 Jan 2012, Jeong JC; JN: 1♀, Jangseong-gun, Mt. Naejangsan National Park, Jahadonggol, M.T., 26 Jun–4 Jul 2006; 1♀, Gurye-gun, Sandong-myeon, Mt. Jirisan National

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Korean name: [1]*각색야자납작맵시벌(신칭), [2]*먹수염납작맵시벌속, [3]*무늬먹수염납작맵시벌(신칭)

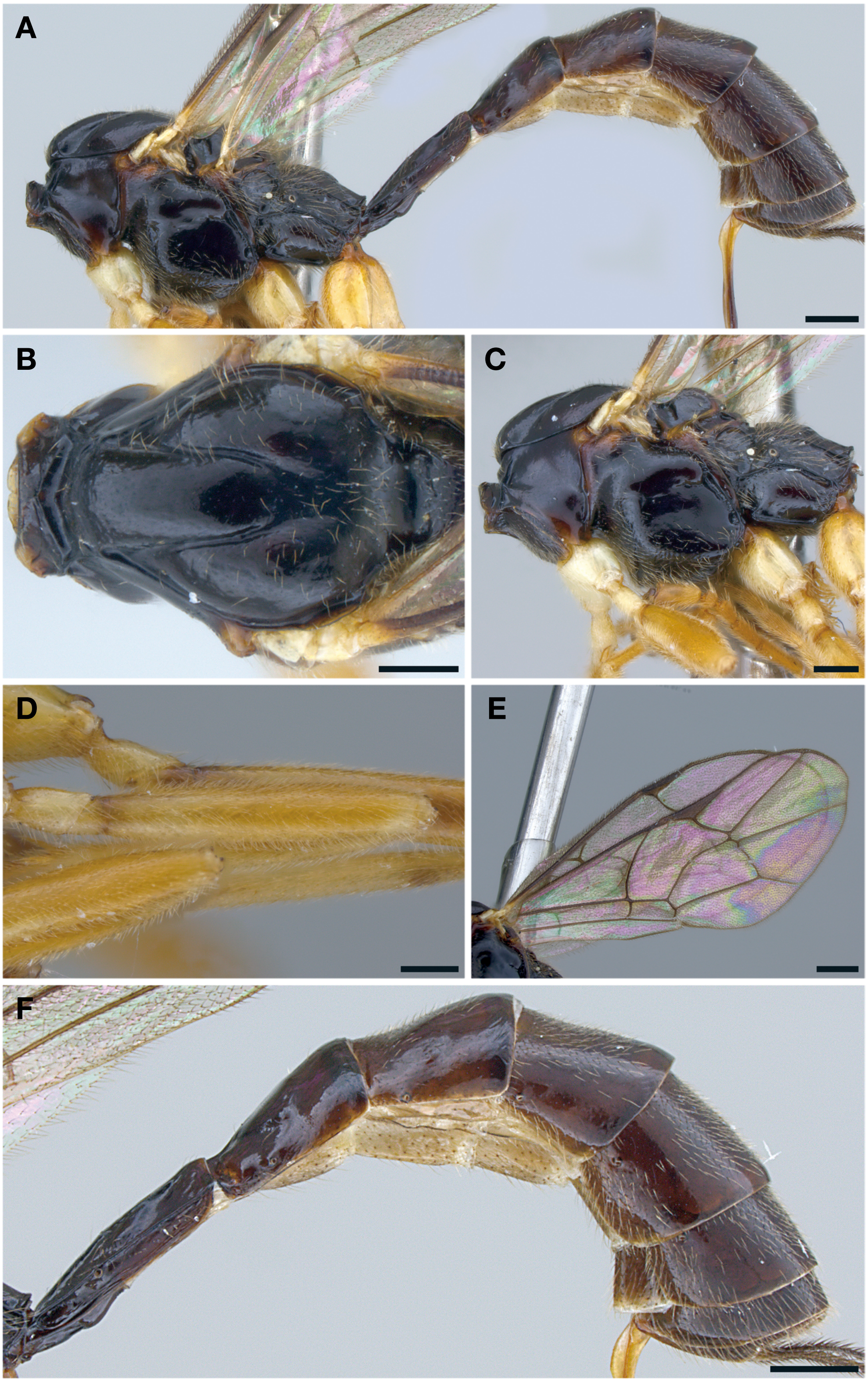

Fig. 5. A–F, *Acrodactyla varicarinata* (Uchida and Momoi, 1958), female. A, Habitus in lateral view; B, Mesonotum in dorsal view; C, Mesosoma in lateral view; D, Mid femur in dorsal view; E, Wings; F, Tergites in lateral view. Scale bars: A–F=0.5 mm.

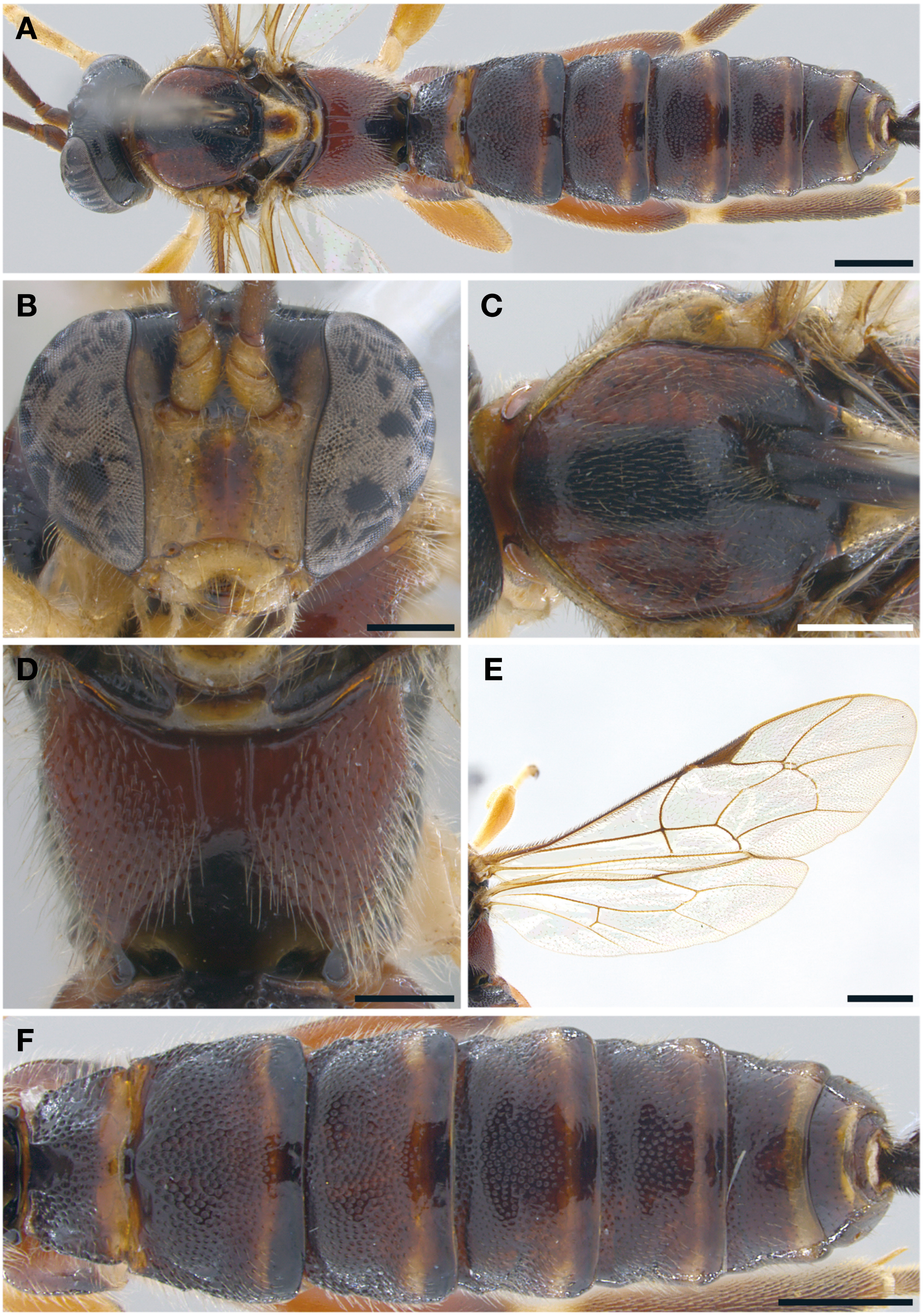

Fig. 6. A–F, *Acropimpla aspera* Gupta and Tikar, 1976, female. A, Habitus in dorsal view; B, Head in frontal view; C, Mesonotum in dorsal view; D, Propodeum in dorsal view; E, Wings; F, Tergites in dorsal view. Scale bars: A–F=0.5 mm.

Park, Nogodan, 35°17′37.75″N, 127°31′52.92″E, 10 Jul–11 Sep 2001, Lee JW; Seoul: 1♀, Nowon-gu, Sanggye 4-dong, Mt. Suraksan, M.T.VIII, 7 Sep–6 Oct 2007, Lim JO; 3♀♀, Nowon-gu, Sanggye 4-dong, Mt. Suraksan, M.T.VIII, Alt. 230 m, 37°40′45″N, 127°5′28″E, 24 Aug–6 Sep 2007, Lim JO.

Diagnosis. Body black with whitish brown to reddish black marks on head, mesosoma, metasoma and legs (Fig. 6A). Face slightly polished, indistinctly and densely punctate, with dense hairs; mid area longitudinally convex with ridge; inner orbits and upper area of face with whitish brown marks (Fig. 6B). Flagellum black except ventral area of basal two flagellomeres brown. Pronotum weakly polished and smooth, upper area of pronotum indistinctly and sparsely punctate, with sparse hairs; epomia distinctly present. Scutellum polished, distinctly and densely punctate, with dense hairs; central area hairless (Fig. 6A). Propodeum weakly polished, roughly and densely punctate, with dense and long hairs; mid area between lateromedian longitudinal carinae smooth; propodeal spiracle oval shaped; areola and costula absent; lateromedian longitudinal carinae weak, extending to basal area (Fig. 6D). Fore leg yellowish brown except apical area of coxa, trochanter, trochantellus, entire femur whitish brown, except dorso-mid area of femur brown; apical area of tarsal claw reddish black. Mid leg whitish brown except dorsal mid area of femur and 5th tarsomere yellowish brown; outer mid area of tibia dark brown; apical area of tarsal claw reddish black. Hind leg whitish brown except coxa, trochantellus and basal to subapical area of femur reddish brown; apical area of femur and subbasal to apical area of tibia black; 5th tarsomere brown; apical area of tarsal claw reddish black. Hind wing with a basal hamulus and seven distal hamuli; vein between intercubitella and subcostella slightly longer than intercubitella; nervulus intercepted by discoidella (Fig. 6E).

Distribution. South Korea (new record), China, India, Myanmar, Thailand.

Region. Eastern Palaearctic (new record), Oriental.

[1]****Acropimpla didyma* (Gravenhorst, 1829) (Fig. 7)**

Pimpla didyma Gravnhorst, 1829: 178. Lectotype: ♀, TL: Poland, TD: IZU.

Pimpla (*Eremochila*) *jezoensis* Matsumura, 1926: 30. Type: ♀, TL: Japan, TD: HU.

Material examined. South Korea: Daegu: 1♂, Mt. Daedeoksan, 18 May 1996, Park SY; GG: 1♂, Euiwang-si, Cheonggye-dong, Mt. Cheonggyesan, 2 Jun 1996, Park EG; 1♂, Yangpyeong-gun, Paddy, 22 Sep 1998, Lee YB; GW: 1♂, Taebaek-si, Mt. Yeonhwasan, 14 May 1997; Seoul: 1♀, Seocho-gu, Wonji-dong, 14 Sep 1985, Kim ER.

Diagnosis. Body black with whitish brown to reddish black area on head, mesosoma, metasoma and legs (Fig. 7A). Face weakly polished, relatively densely punctate, with hairs; central area longitudinally and slightly convex; inner orbits with yellowish brown longitudinal marks (Fig. 7B). Flagellum black. Pronotum weakly polished and smooth; upper and lower apical area relatively sparsely punctate, with hairs; epomia distinct. Scutellum slightly convex, weakly polished, indistinctly and densely punctate, with hairs (Fig. 7A). Propodeum polished, distinctly and densely punctate, with dense hairs; mid and apical area smooth; propodeal spiracle circle shaped; areola and costula absent; lateromedian longitudinal carinae indistinct, extending to mid area (Fig. 7D). Fore leg yellowish brown except basal outer area of coxa, outer area of femur and tibia, ventral area of 4th and 5th tarsomeres reddish brown; entire tarsal claw reddish black. Mid leg yellowish brown except entire coxa, basal to subapical area of femur, ventral subapical area of tibia reddish brown; dorsal area of 4th and 5th tarsomeres brown; apical area of tarsal claw reddish black. Hind leg reddish brown except trochanter, trochantellus, basal area of tibia yellowish brown; mid area of tibia whitish brown; apical area of femur, subbasal and apical area of tibia black. Hind wing with a hamulus and seven distal hamuli; vein between intercubitella and subcostella distinctly longer than intercubitella; nervulus intercepted by discoidella (Fig. 7E).

Distribution. South Korea (new record), Austria, Belarus, Belgium, China, Czech Republic, Finland, France, Germany, Hungary, Iceland, Italy, Japan, Latvia, Poland, Romania, Russia, Slovakia, Sweden, Switzerland, Turkey, Ukraine, United Kingdom.

Region. Eastern Palaearctic, Western Palaearctic.

[2]****Acropimpla nakula* Gupta and Tikar, 1976 (Fig. 8)**

Acropimpla nakula Gupta and Tikar, 1976: 157. Holotype: ♀, TL: China-Fujian, TD: AEI.

Material examined. South Korea: GB: 1♀, Uljin-gun, Seomyeon, Hwawon-ri, Bulyeong valley, 6 May 1981, Han JG.

Diagnosis. Body black with whitish brown to reddish brown marks on mesosoma, metasoma and legs (Fig. 8A). Face weakly polished and sparsely punctate, with sparse hairs; mid area weakly convex and smooth (Fig. 8B). Pronotum polished and sparsely punctate, with sparse hairs; lower half area smooth; epomia distinct. Scutellum weakly polished and sparsely punctate (Fig. 8A). Propodeum weakly polished and relatively sparsely punctate, with hairs; distance between punctures on basal area distinctly short; propodeal spiracle circle shaped; areola and costula absent; lateromedian longitudinal carinae indistinct, extending to apical area. Fore leg whitish brown except basal area of coxa, dorsal mid and outer area of femur yellowish brown; apical area of 5th tarsomere brown; apical area of tarsal claw reddish black. Mid

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Korean name: [1]*만곡먹수염납작맵시벌 (신칭), [2]*붉은먹수염납작맵시벌 (신칭)

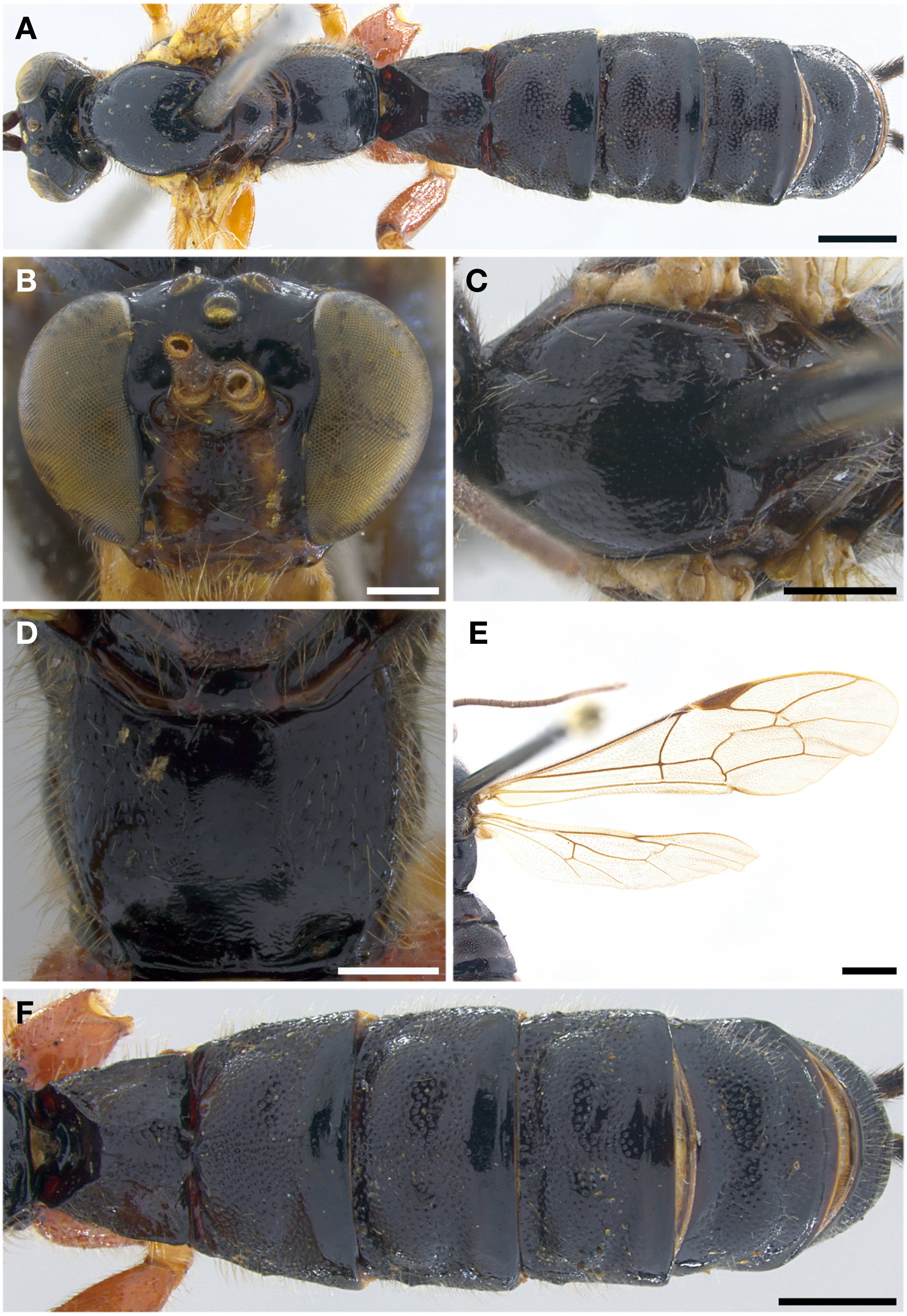

Fig. 7. A–F, *Acropimpla didyma* (Gravenhorst, 1829), female. A, Habitus in dorsal view; B, Head in frontal view; C, Mesonotum in dorsal view; D, Propodeum in dorsal view; E, Wings; F, Tergites in dorsal view. Scale bars: A–F=0.5 mm.

leg whitish brown except basal area of coxa, mid outer and dorsal area of femur, inner subbasal to sub apical area of tibia yellowish brown; apical area of 5th tarsomere and basal area of tarsal claw dark brown; apical area of tarsal claw reddish black. Hind leg whitish brown except entire coxa, mid area of femur and ventral area of tibia yellowish brown.

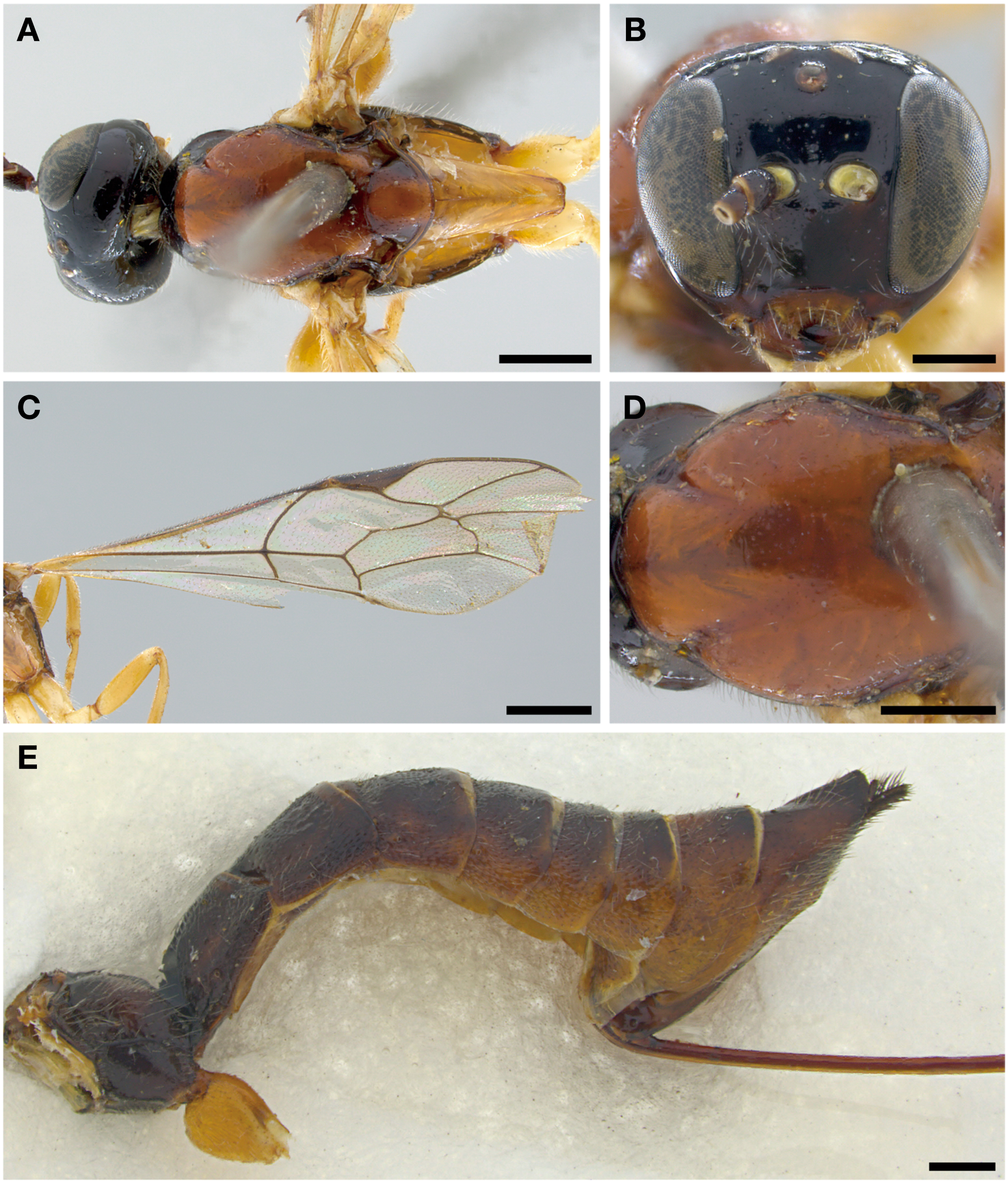

Fig. 8. A–E, *Acropimpla nakula* Gupta and Tikar, 1976, female. A, Head and mesosoma in dorsal view; B, Head in frontal view; C, Wing; D, Mesonotum in dorsal view; E, Tergites in lateral view. Scale bars: A–E = 0.5 mm.

Hind wing with a basal hamulus and seven distal hamuli; vein between intercubitella and subcostella as long as intercubitella; nervulus intercepted by discoidella.

Distribution. South Korea (new record), China, Thailand.

Region. Eastern Palaearctic (new record), Oriental.

[1*]*Acropimpla pictipes* (Gravenhorst, 1829) (Fig. 9)

Pimpla pictipes Gravenhorst, 1829: 198. Type: ♂, TL: Germany, TD: IZU.

Pimpla gravenhorstii Taschenberg, 1863: 245. Lectotype: ♀, TL: Germany, TD: ZIU.

Pimpla stenostigma Thomson, 1877: 755. Type: ♀, TL: Sweden, TD: ZI.

Pimpla ratzeburgii Kriechbaumer, 1887: 84. Lectotype: ♀, TL: Germany, TD: ZS.

Epiurus proximus Förster, 1888: 527. Type: unknown, TL:

Korean name: [1*]자루먹수염납작맵시벌 (신칭)

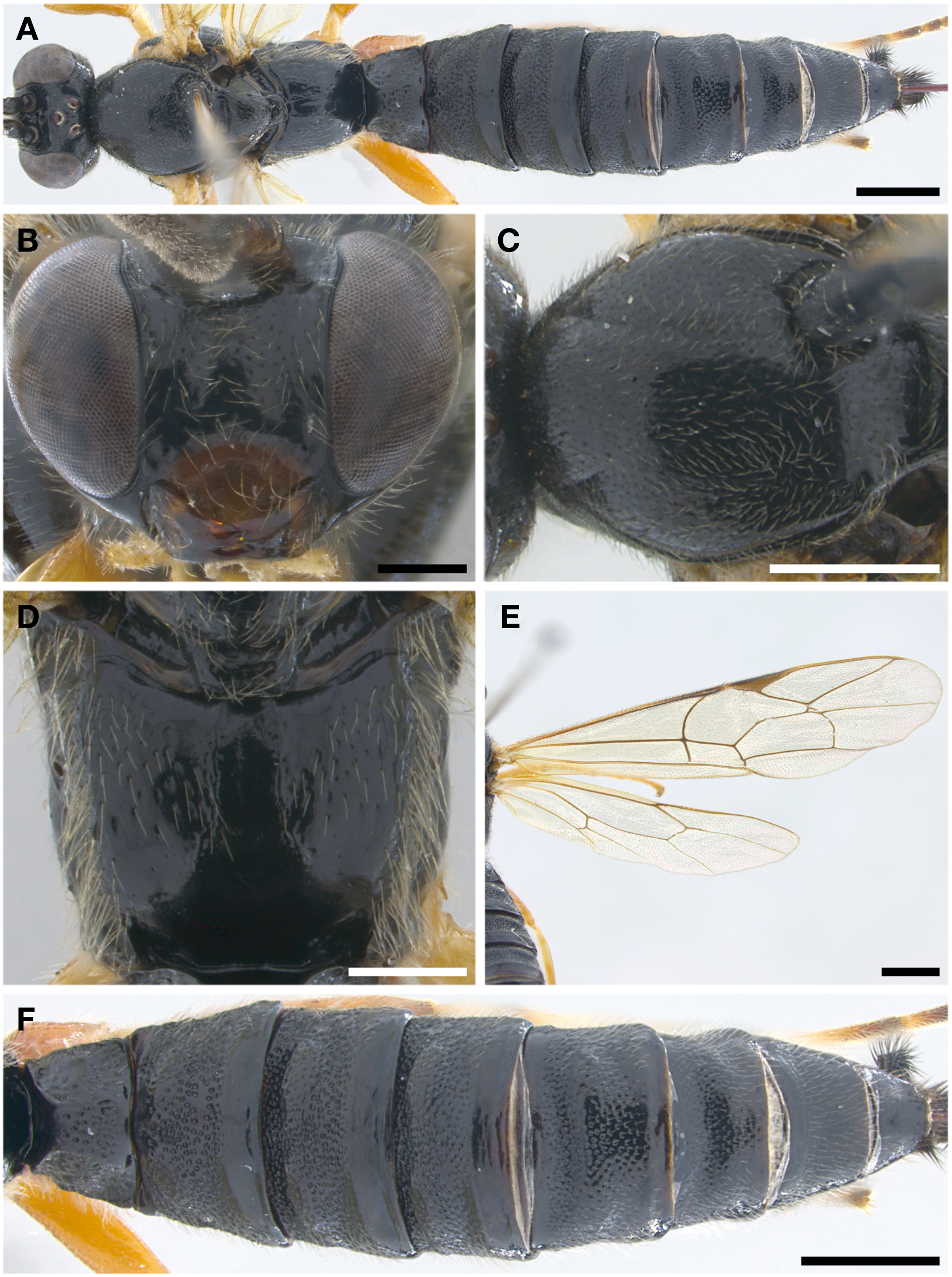

Fig. 9. A–F, *Acropimpla pictipes* (Gravenhorst, 1829), female. A, Habitus in dorsal view; B, Head in frontal view; C, Mesonotum in dorsal view; D, Propodeum in dorsal view; E, Wings; F, Tergites in dorsal view. Scale bars: A–F=0.5 mm.

unknown, TD: unknown.

Material examined. South Korea: CB: 1♀, Danyang-gun, Gagok-myeon, Mt. Sobaeksan National Park, 31 Jul 1988, Kim HG; CN: 1♀, Gongju-si, Gyeryong-myeon, Mt. Gyeryongsan, Cheonhwang-bong, 25 Jul–28 Oct 2012, Jeong JC; GB: 2♀♀, Yeongyang-gun, Ilwol-myeon, Mt. Irwolsan, 36°48′29″N, 129°05′25″E, 11 Jul 2014, Oh SH; 1♀, ditto, 30 Jul 2014, Lee JW; GG: 1♀, Gwangju-si, Namhansanseong-myeon, Sanseong-ri, Namhansanseong, 6 Jun 1996, Hong

SM; 1♀, Suwon-si, Gwonseon-gu, Seodun-dong, Jamsa insect laboratory, Eco park, 6 Oct 1999, Kim TW; GN: 1♀, Hadong-gun, Cheongam-myeon, Gunghyang-ri, Mt. Jusan, 1–2 Aug 2002, Ahn TH; 3♀♀, Jinju-si, Gajwa-dong, 30 Sep 1987, Lee JW; GW: 1♀, Yeongwol-gun, Yeongwol-eup, Samok-ri, Front area of Donggulbawi, M.T., 37°11′52.32″N, 128°30′32.63″E, 20 Sep–8 Oct 2011, Kim DK; 1♀, Wonju-si, Panbu-myeon, Seogok-ri, Mt. Baekunsan, From Yongsugol to Alt. 1,087.1 m, 6 Aug 2008, Cha DJ, Jung JM, Lee YB; JN: 1♀, Suncheon-si, Seungju-eup, Jukhak-ri, San 802, Mt. Jonggyesan, Seonam temple, 5 May 1995, Lee MS; 1♀, Gurye-gun, Toji-myeon, Naedong-ri, Mt. Jirisan National Park, Piagol, 20 Sep 1988, Gang HG; Seoul: 1♀, Seongbuk-gu, Jeongreung-dong, Mt. Bukhansan National Park, 26 May 1990, Gye JH; 1♀, Seocho-gu, Wonji-dong, 1 Jun 1985, Jho HY; Bulgaria: 1♀, Strandja, Vitanovo, 27 Jul 2000, Kolarov J.

Diagnosis. Body black with whitish brown to reddish black marks on head, mesosoma and legs (Fig. 9A). Face weakly polished and indistinctly densely punctate, with dense hairs; mid upper area weakly convex (Fig. 9B). Flagellum dark brown except dorsal area of 1st to near apical flagellomeres. Pronotum weakly polished and smooth; upper basal area sparsely punctate, with sparse hairs; upper apical area relatively densely punctate, with dense hairs; epomia distinct. Scutellum slightly polished, slightly and densely punctate, with dense hairs (Fig. 9A). Propodeum weakly polished, roughly and densely punctate, with dense hairs; mid and apical area smooth; propodeal spiracle circle shaped; areola and costula absent; lateromedian longitudinal carinae present to near apical area (Fig. 9D). Fore leg yellowish brown except basal area of coxa, basal to subapical outer area of femur reddish brown; inner basal to subapical area brown; apical area of tarsal claw reddish black. Mid leg whitish brown except basal to subapical area of coxa and femur, apical area of 1st to 4th tarsomeres and 5th tarsomere reddish brown; apical area of coxa, trochanter, trochantellus, apical area of femur and basal area of 2nd to 4th tarsomeres yellowish brown; ventral area of tibia and basal area of tarsal claw brown; apical area of tarsal claw reddish black. Hind leg whitish brown except entire coxa, basal to subapical area of femur reddish brown; trochanter and trochantellus reddish brown; basal to subapical area of tibia, 1st and 2nd tarsomeres, basal area of 3rd tarsomere and tarsal claw brown; dorso-subbasal and apical area of tibia, apical area of 1st to 3rd tarsomeres, entire 4th and 5th tarsomeres black; apical area of tarsal claw reddish black. Hind wing with a basal hamulus and seven distal hamuli; vein between intercubitella and subcostella slightly longer than intercubitella; nervulus intercepted by discoidella (Fig. 9E).

Distribution. South Korea (new record), Austria, Azerbaijan, Belarus, Belgium, Bulgaria, China, Czech Republic, Finland, France, Germany, Hungary, Iceland, Italy, Japan, Latvia, Lithuania, Moldova, Mongolia, Montenegro, Netherlands, Norway, Poland, Romania, Russia, Serbia, Slovakia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom, Yugoslavia.

Region. Eastern Palaearctic, Western Palaearctic.

[1]****Acropimpla persimilis*** **(Ashmead, 1906)**

Epiurus persimilis Ashmead, 1906: 180. Type: ♀, TL: Japan, TD: USNM.

Material examined. South Korea: CB: 2♀♀, Boeun-gun, Songjisan-myeon, Sannae-ri, Mt. Songnisan National Park, Beopju temple, 36°32′29.43″N, 127°49′57.4″E, 12 May 2000, Lee JW; 1♀, Danyang-gun, Danyang-eup, Cheondong-ri, Mt. Sobaeksan National Park, Bukbu temple, 36°57′N, 128°28′E, M.T., 8 Jun–6 Jul 2005; Daejeon: 1♀, Dong-gu, Daejeon Univ., 20 Jul–10 Oct 2007, Lee JW; 2♀♀, Dong-gu, Daejeon Univ., M.T., 36°19′57.9″N, 127°21′40.38″E, 8 Oct–30 Nov 2007, Lee JW; GB: 1♀, Bonghwa-gun, Myeongho-myeon, Gwancheong-ri, Mt. Cheongryangsan, 27 Jul 2015, Lee JW; 1♀, Cheongdo-gun, Unmun-myeon, Mt. Unmunsan, Site 4, 12 May 2012, Kim JE; GG: 1♀, Anyang-si, Manan-gu, Kwanag Arb., Alt. 126 m, 37°25′15.6″N, 126°56′44.3″E, 25 Sep–15 Oct 2008, Lim JW; 1♀, Anyang-si, Manan-gu, Kwanag Arb., M.T., Alt. 175 m, 37°25′14″N, 126°57′1″E, 3–20 May 2009, Lim JO; GN: 1♀, Jinju-si, Ibanseong-myeon, Daecheon-ri, M.T.III, 35°13′11.73″N, 128°41′25.58″E, 26 Sep–5 Oct 2005, Ahn BK; 1♀, ditto, 26 Sep–15 Oct 2005, Ahn BK; GW: 1♀, Hongcheon-gun, Hongcheon-eup, Jangjeonpyeong1-ri, Geomdeungjae village, M.T., 14 Jul–7 Sep 2006; 1♀, Wonju-si, Heungeop-myeon, Maeji-ri, Yeonsei Univ., 37°16′54.49″N, 127°53′54.54″E, M.T., 16 Sep–12 Oct 2010, Han HY; JB: 2♀♀, Buan-gun, Jinseo-myeon, Unho-ri (Mal), Byeongsan peninsula plantation broad-leaved tree, 17 Sep 2015, Hong EJ; 1♀, ditto, 15 Oct 2015, Hong EJ; 1♀, Muju-gun, Seolcheon-myeon, 4 Jul 1993, Kim SR; JN: 1♀, Gurye-gun, Sandong-myeon, Mt. Jirisan National Park, Nogodan, 35°17′59.72″N, 127°31′5.55″E, 10 Jul–11 Sep 2001, Lee JW; 1♀, Wando-gun, Soan-myeon, Maengseon-ri, Soan-island, 3–16 Apr 2011, Hong EJ; Seoul: 1♀, Hanam-si, Sinjang-dong, Mt. Geomdansan, 15 May 2001, Lee JY; 1♀, Nowon-gu, Sanggye-dong, Mt. Suraksan, 9 Jun 1992, Kwak YG.

Diagnosis. Body black with whitish brown to reddish black marks on head, mesosoma and legs. Face entirely

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Korean name: [1]*먹수염납작맵시벌

polished, slightly and sparsely punctate, with sparse hairs; the middle of upper face relatively distinctly punctate and convex, with distinct longitudinal ridge; inner orbit with weak longitudinal furrow. Pronotum weakly polished and smooth; basal mid to upper area distinctly and densely punctate, with dense hairs; basal area with longitudinal suture; mid area with distinct oblique furrow; epomia indistinct. Scutellum weakly polished, distinctly and densely punctate, with dense hairs. Propodeum strongly polished, distinctly and densely punctate, with dense hairs; central and dorso-apical mid area of propodeum smooth; lateral apical area indistinctly and sparsely punctate, with sparse hairs; propodeal spiracle oval shaped; areola and costula absent; lateromedian longitudinal carinae indistinctly present to mid area. Fore leg yellowish brown except entire coxa, trochantellus, basal to subapical area of femur brown; trochanter and apical area of femur whitish brown; apical area of tarsal claw reddish black. Mid leg yellowish brown except entire coxa reddish brown; basal to subapical area of femur, basal area of trochanter, apical area of trochantellus, subbasal and apical mid area of tibia brown; apical area of femur, basal and mid area of tibia whitish brown; apical area of tarsal claw reddish black. Hind leg black except entire coxa, basal to subapical area of femur reddish brown; basal area of trochanter, tibia and tarsal claw, dorso-basal area of tibia, basal area of trochantellus brown; apical area of trochanter, subapical dorsal area of tibia whitish brown; apical area of tarsal claw reddish black. Hind wing with a basal hamulus and eight distal hamuli; vein between intercubitella and subcostella distinctly longer than intercubitella; nervulus intercepted by discoidella.

Distribution. South Korea, China, Japan, Russia.

Region. Eastern Palaearctic, Oriental.

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